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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,373	07/06/2001	Hua Li	NUFO003	6011

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EXAMINER

VY, HUNG T

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/900,373

Applicant(s)

LI ET AL.

Examiner

Hung T Vy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 5) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: _____

DETAILED ACTION

1. In response to the communications dated 12/04/2002, claims 1-30 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrases "channel selector tuner", "external cavity tuner" render claim indefinite because it is not clear what kind the tuner. The claim fails to recite how tuners configure to tune laser a selected channel and external cavity to selected optical path length.

Regarding claim 6, the phrase "tuning mechanism" renders the claim indefinite because it is unclear how is tuning mechanism configured. The claim fails to show how tuning mechanism configured to select a transmission wavelength and a cavity optical path length.

Regarding claims 10, 11 the phrase "orthogonal" renders the claim indefinite because it is not clear. What is the meaning of 'orthogonal', why wavelength tuning

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element configured to tune orthogonally with respect to said external cavity mode.

Further, the claims recite the tuning element, tuning assembly but the claims fail to recite what elements in laser to tune.

Claims 1-5, and 7-9 depend from rejected claim 1,6,10 and 11 thereby render these dependent claims indefinite.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-30 are rejected under 35 U. S. C. § 103 (e) as being anticipated by U.S. Green et al., pub. No.: US 2002/0126345 or Zorabedian et al., U.S. Patent No. 6,282,215 in view of Mattori et al., U.S. Patent No. 6,081,539.

Regarding claim 1-30, Gree et al. or Zorabedian et al. disclose a laser including an external cavity, comprising: (a) a channel selector tuner (802 on Zoragedian et al. or 254 on Gree et al.) configured to tune said laser to a selected channel; and (b) an external cavity tuner (312 on Gree et al. or 162 on Zoragedian et al.) configured to tune said external cavity to a selected optical path length; (c) said channel selector tuner independently operable with respect to said external cavity tuner (Fig. 3A on Gree et al.

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or Fig 8A on Zorabedian et al). It is inherent that Wavelength tuning element configured to tune orthogonal with respect to said external cavity mode tuning element (See fig 1 in Zorabedian et al.). The laser, wherein: (a) said channel selector tuner is operable according to a channel selection signal (See column 2, line 38-47); and (b) said external cavity is operable according to a cavity mode signal (See column 5, line 25-28). Zorabedian et al. disclose the laser, wherein: (a) said channel selection signal is derived from channel selector tuning data in a look-up table (824) (See column 13, line 3-6), and (b) said cavity mode signal is derived from a detector (1020) configured to measure external cavity loss associated with cavity optical path length (See column 13, line 55-65 and fig 10). Zorabedian et al. disclose the laser, wherein: (a) said channel selector tuner is operatively coupled to a first controller (260) and operable according to channel selector tuning data in a look-up table (824); and (b) said external cavity tuner is operatively coupled to a second controller (1002) and operable according to error signals derived from a detector (1020) configured to measure external cavity loss associated with cavity optical path length (See Fig 2e and 10). Green et al. or Zorabedian et al. disclose an external cavity laser apparatus, comprising: a gain medium (224 in Green et al.)(102 in Zorabedian et al.) having first (226 in Green et al) (104 in Zorabedian et al.) and second output facets (228 in Green et al.)(106 in Zorabedian et al.), said gain medium emitting a coherent beam from said first output facet (226 in Green et al.) (106 in Zorabedian et al.) along an optical path; an end mirror located (264 in Green et al.) (122 in Zorabedian et al.) in said optical path, said end mirror and said second output facet defining an external cavity; a wavelength tuning

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element (250 in Green et al.)(162 in Zorabedian et al.) positioned in said optical path before said end mirror (264 in Green et al.)(122 in Zorabedian et al.); a wavelength tuning assembly (250 in Green et al.)(160 in Zorabedian et al.) operatively coupled to said wavelength tuning element (290 in Green et al.)(160 in Zorabedian et al.) and configured to adjust said wavelength tuning element, and a cavity optical path length tuning assembly operatively coupled to said external cavity and configured to adjust said external cavity optical path length; said wavelength tuning assembly configured to operate independently from said cavity optical path length tuning assembly (See Fig 2 A and page 3, paragraph 31 in Green et al. or Fig 1 A in Zorabedian et al.). Zorabedian et al. disclose the external cavity laser apparatus, wherein said detector comprises a voltage sensor (1020) configured measure voltage modulation across said gain medium and a modulation element, said modulation element operatively coupled to said external cavity and configured to introduce a modulation to said cavity optical path length, said modulation usable to derive said cavity error mode signal (See column 2, line 1-8).

Green et al. disclose the external cavity laser apparatus, wherein said cavity optical path length tuning assembly comprises a thermally tunable compensating member, said thermally tunable compensating member coupled to said end mirror (See page 3, paragraph 33) and a grid (248) generator positioned in said optical path (See Fig 2 A).

But Green et al. or Zorabedian et al. do not teach a channel selector tuner and external cavity tuner are independently operable. However, Mattori et al. teach a channel selector tuner (23) and external cavity tuner (21) are independently operable with

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respect to each other by control section (5) (See Fig 1 and column 3, line 20-25 or column 8, line 44-52).

With respect to claims 20-26, the methods for tuning an external cavity laser are considered as product by process steps.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify Green et al. or Zorabedian et al. to have wavelength tuner and cavity tuner are independently operable as taught by Mattori et al. because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

Citation of Pertinent References

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Goto discloses Tunable Wavelength Light Source Incorporated Optical Filter Using Interferometer into External cavity, U.S. Patent No. 5444724.

Conclusion


6. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

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A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0759. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


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January 21, 2003.